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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/774,326	02/06/2004	Takuji Nomura	81846.0035	8530

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EXAMINER	
VAN, LUAN V	

ART UNIT	PAPER NUMBER
1795	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/774,326	NOMURA ET AL.	
	Examiner	Art Unit	
	LUAN V. VAN	1795	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *07 March 2008*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1,4,7,14-17 and 21-24* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) *7 and 14-17* is/are allowed.

6)☒ Claim(s) *1,4 and 21-24* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Response to Amendment

Applicant's amendment of March 7, 2008 does not render the application allowable.

Status of Objections and Rejections

The rejection of claims 1 and 21-24 rejected under 35 USC 112, second paragraph, is withdrawn in view of Applicant's amendment. All other rejections from the previous office action are maintained. New grounds of rejection under 35 U.S.C. 103(a) are necessitated by the amendments.

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claim 4 is rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. Claim 4 requires the projecting part is provided integrally with the base member. Applicant's original specification discloses that the projecting

member is formed integral with the insulating support member (paragraph 160), and not with the base member as recited in claim 4. The specification therefore does not describe this configuration, and the subject matter is deemed new matter.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Claims 1, 4, 21, and 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over JP 11-200561, herein referred to as JP '561, in view of Ouchida et al. (U.S. 6,525,264) and Dinwoodie (U.S. 5,505,788).

Regarding claims 1 and 4, JP '561 teaches a solar cell module comprising photovoltaic cell (2); and a rectangular frame that encompasses the instant base member and comprises a ridge-side surface at section (1D) which projects downward at

part (13D); an eaves-side surface at section (1C); a trough-side surface at section (13A) and an anti-trough-side surface at section (13B) (see Figures 1,2, and 3). The trough-side surface at section (13A) has a under-lapping part (12A, 14A, 15A), extending along the ridge-side to the eaves-side of the roof and configured to overlap the ridge side edge of an adjacent solar cell module (see Figures 3 and 7). Likewise, the anti-trough-side surface at section (13B) has a projecting part (12B, 14B), extending along the ridge-side to the eaves-side of the roof and configured to overlap the trough section of an adjacent solar cell module (see Figures 3 and 7). Note that a solar cell module is a tile and thus, an adjacent solar cell module is also an adjacent tile. The photovoltaic cell (2) is mounted such that a lower surface of photovoltaic cell (2) is positioned above and is mounted to an upper surface of said rectangular frame (see Figure 2). For example, reference sign (3B) in Figure 2 is an upper surface of the frame and the photovoltaic cell (2) is mounted such that a lower surface of photovoltaic cell (2) is positioned above and is mounted to said upper surface at (3B). A lower surface of, for example, the projecting part (12B) of the anti-trough-side contacts an upper edge of a rising wall (11A) of section (13A) which defines the trough section of the adjacent tile or module to seal a gap (see Figure 11).

With respect to the amended limitation of the projecting part width is less than the width of the trough section and that the projecting part contacts a rising portion of the trough section, JP '561 reads on the instant limitation, because the projecting part (12B) width as seen in Fig. 11 is less than the width of the trough section (7 which includes 7E) as seen in Fig. 4 and 11, and since the elastic water blocking material (7C) contacts

the projecting part and is part of the trough section, it reads on the latter limitation. Furthermore, it would have been obvious to one having ordinary skill in the art to have modified the width of the projecting part and the trough section in order to minimize the spacing between the solar cell module and the tile so as to increase the packing density.

JP '561 teaches the limitations of the instant claims other than the difference which is discussed below.

JP '561 does not specifically teach the structure of its photovoltaic cell (2), and, as such, does not specifically teach the combination of a base member and support member recited in instant independent claim 1 or placement of the solar cell on an uppermost surface of the base member.

Ouchida et al. teaches a photovoltaic cell comprising semiconductor layer (402), a sealing resin film (403), and a thermal insulation layer (404) (see Figure 12; and col. 18, lines 23-44). The sealing resin film along with frame (405) is a rectangular base member. The thermal insulation layer (404) corresponds to the instant insulating support member (see col. 18, lines 34-44). Ouchida et al.'s photovoltaic cell structure provides the advantage of suppressing photo-degradation and providing large output (see col. 4, lines 16-19). It would have been obvious to one of ordinary skill in the art at the time the invention was made to have used Ouchida et al.'s photovoltaic cell structure for the photovoltaic cell of JP '561 because Ouchida et al.'s photovoltaic cell structure provides the advantage of suppressing photo-degradation and providing large output (see co. 4, lines 16-19). As seen in Figure 12, Ouchida et al.'s frame, which is

also a bottomless and topless box, is adapted to receive said insulation layer (104), as per instant claim 22.

Dinwoodie discloses a thermally regulated photovoltaic roofing assembly as shown in figure 9. Figure 9 shows the photovoltaic tiles, 902, are configured to be laid together with tiles, 904, on the roof of a building. Figures 1 through 8 all show different embodiments of the solar cell modules with the solar cells provided on the uppermost surface of the base member such that a lower surface of the solar cell is positioned above and is mounted to the uppermost surface of the base member. The figures also show the use of insulating support members provided on lower surfaces of the base members, rectangular base members (shaped as the solar cell modules) with downward projected surfaces to mount the module. It would have been further obvious to one having ordinary skill in the art at the time the invention was made to place the solar cell of JP '561 on the uppermost surface as in Dinwoodie because the specific placement of the solar cell is a design choice and the tiles of Dinwoodie show a known design within the art is to place the solar cells on the uppermost surface of a tile base. Further, the placement on the uppermost surfaces eliminates any material above the solar cell that could shadow the cell and reduce the power output.

With respect to the limitation that the under lapping part and projecting part is continuously, i.e. integrally, provided on a side of the base member, the use of a one-piece construction instead of the structure disclose in JP '561 would be merely a matter of obvious engineering choice (MPEP 2144.04 V.). Furthermore, it is understood to one having ordinary skill in the art that forming the under lapping part and projecting

member integrally with the base number would simplify the construction and reduce the number of parts for assembly. It would have been obvious to one having ordinary skill in the art to have formed the under lapping part and projecting part integrally with the base member in order to simplify the construction of the solar cell module.

Regarding claim 4, JP '561 teaches that part of the projecting part 12B is in non-contact with the bottom portion of the trough section of the adjacent tile (figure 11).

Regarding claim 21, JP '561's rectangular frame, which encompasses the instant base, is a box that is bottomless, as well as topless.

Claim 23 is rejected under 35 U.S.C. 103(a) as being unpatentable over JP '561 in view of Ouchida et al. and Dinwoodie as applied to claims 1,4, 21, and 22 above, and further in view of Nakazima et al. (EP 1071139 A2).

JP '561 in view of Ouchida et al. and Dinwoodie, as relied upon for the reasons recited above, teaches the limitations 23, the difference being that JP '561 in view of Ouchida et al. and Dinwoodie does not specifically teach that the photovoltaic cell has a terminal box, and that the terminal box is inserted and mounted in an opening formed in the base member. However, the use of a base member that has an opening for inserting and mounting a terminal box for a photovoltaic cell is conventional in the art, as seen in Figure 1 of Nakazima et al., which has terminal box storage recess (3). It would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified the module structure of JP '561 in view of Ouchida et al. and

Dinwoodie so as to include an opening for inserting and mounting a terminal box for the photovoltaic cell because such is conventional in the art, as shown by Nakazima et al.

Claim 24 is rejected under 35 U.S.C. 103(a) as being unpatentable over JP '561 in view of Ouchida et al. and Dinwoodie as applied to claims 1,4, 21, and 22 above, and further in view of JP 2000-174313, herein referred to as JP '313.

JP '561 in view of Ouchida et al. and Dinwoodie, as relied upon for the reasons recited above, teaches the limitations 24, the difference being that JP '561 in view of Ouchida et al. and Dinwoodie does not specifically teach that the insulating support member, i.e., said thermal insulation layer (404), prevents the base member, i.e., the frame, from being deformed when the frame receives the weight of a worker stepping on or laying the solar cell module. JP '313 teaches a solar cell module that enables a worker to stand on the module when the worker installs and fixes the module, wherein, as seen in Figures 8 and 9, the module has a supporter material (23) that permits large loading on the module (see also paragraph 0146). It would have been obvious to one of ordinary skill in the art at the time the invention was made to have provided the solar cell module of JP '561 in view of Ouchida et al. and Dinwoodie with the support structure as taught by JP '313 because this would provide the solar cell module with support that permits large loading on the module, and that enables a worker to stand on the module when the worker installs and fixes the module, as taught by JP '313.

Allowable Subject Matter

Claims 7 and 14-17 are allowed. The reasons for allowance have been discussed in the office action dated August 22, 2007.

Response to Arguments

In the arguments presented on page 10 of the amendment, the applicant argues that JP '561 does not teach the width of the projecting portion being less than the width of the trough section. The examiner respectfully disagrees. As stated above, JP '561 reads on the instant limitation, because the projecting part (12B) width as seen in Fig. 11 is less than the width of the trough section (7, which includes 7E) as seen in Fig. 4 and 11, and since the elastic water blocking material (7C) contacts the projecting part and is part of the trough section, it reads on the latter limitation. Furthermore, it would have been obvious to one having ordinary skill in the art to have modified the width of the projecting part and the trough section in order to minimize the spacing between the solar cell module and the tile so as to increase the packing density.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within

TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Luan V. Van whose telephone number is 571-272-8521. The examiner can normally be reached on M-F 9:30-6:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nam Nguyen can be reached on 571-272-1342. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

/Edna Wong/

Primary Examiner, Art Unit 1795

LVV
April 25, 2008